What is claimed is:

1. A batch type atomic layer deposition apparatus, comprising:

a reaction reaction chamber having a predetermined volume constituted with an upper plate, a lower plate and sidewalls;

a rotating plate loaded with a plurality of wafers, wherein each wafer is located in the reaction chamber and loaded radially at a predetermined position disposed in an identical distance from a center of the rotating plate;

a radial shower head for forcing a gas to flow toward an upper surface of the wafer as passing through a center of the upper plate, wherein the radial shower head faces a center of an upper surface of the rotating plate;

a heating plate having a heating zone capable of controlling a temperature of any area and being located on the lower plate with a predetermined distance of the rotating plate;

a cooling plate attached to an upper surface of the upper plate; and

a plasma excitement electrode encompassing an entrance of the radial shower head by being located between the cooling plate and the entrance of the radial shower

head.

2. The batch type atomic deposition apparatus as recited in claim 1, further comprising an ion extraction electrode encompassing an exhaust of the radial shower head located between the exhaust of the radial shower head and the upper plate.

3. The batch type atomic deposition apparatus as recited in claim 2, wherein the ion extraction electrode is supplied with a DC voltage.

4. The batch type atomic deposition apparatus as recited in claim 1, wherein the plasma excitement electrode is constructed in a ring type structure and supplied with a RF power.

5. The batch type atomic deposition apparatus as recited in claim 1, wherein the exhaust of the radial shower head has an angle ranging from about 120° to about 160°.

6. The batch type atomic deposition apparatus as recited in claim 1, wherein a separating distance between

the radial shower head and the rotating plate ranges from about 3.5 mm to about 7 mm.

7. A method for an in-situ cleaning of a batch type atomic layer deposition apparatus, the method comprising the steps of:

depositing an atomic layer on a wafer;

injecting a cleaning gas into a radial shower head;

applying a RF power to a plasma excitement electrode when the cleaning gas passes through the radial shower head; and

inducing a reaction between the cleaning gas activated by the plasma excitement electrode and a remnant atomic layer on a rotating plate.

8. The method as recited in claim 7, wherein the RF power of about 100 W to about 600 W is applied to the plasma excitement electrode.

9. The method as recited in claim 7, wherein the cleaning gas is a mixture of Cl_2 gas and Ar gas, however each gas is injected separately.

10. A method for an in-situ cleaning of a batch type

atomic layer deposition apparatus, the method comprising the steps of:

depositing an atomic layer on a wafer;

injecting a cleaning gas into a radial shower head;

creating an activated molecule of a cleaning gas through applying a RF power to a plasma excitement electrode;

ionizing an activated molecule by applying an ion extraction voltage to an ion extraction electrode; and

inducing a collision between the ionized molecule and a remnant atomic layer of a rotating plate.

11. The method as recited in claim 10, wherein the ion extraction voltage applied to the ion extraction electrode ranges from about -500 V to about -50 V.

12. The method as recited in claim 10, wherein the RF power applied to the plasma excitement electrode ranges from about 100 W to about 600 W.

13. The method as recited in claim 10, wherein the cleaning gas is a mixture of Cl_2 gas and Ar gas, and each gas is injected separately.